

Work Order ID 144611

April 21, 2016 2:06:44 PM

144611

Page 1

Item ID: D4092-1 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Maintenance Step
 Start Date: 5/2/2016 Start Qty: 12.00 ***12*** Cust Item ID:
 Required Date: 5/13/2016 Req'd Qty: 12.00 ***12*** Customer:
 Reference: 0

Approvals: Process Plan: MLS Date: APR 22 2016 Tooling: 0 Date: Run Start ***NR1***
 QC: Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D4092	C

100	Cut blanks as per folio	0.00				28	Ø		DAS 44 9-89 16/05/09
100									
Bandsaw	Memo	0.00							
Jeaspa Bandsaw									

110		0.99				200	Ø		16/05/11
110									
HAAS 1	Memo	3.72							DAS 44 9-89 16-05-12
HAAS CNC vertical machine #1	Mill as per Dwg and Folio FA935								
	Dwg Rev: <u>C</u>								
	Folio rev: <u>B</u>								

Debur

****Grind flush transition machining mark after machining bottom of extrusion, see detail A.****

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
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Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

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Page 2

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Item Name: Maintenance Step

Start Date: 5/2/2016 **Start Qty:** 12.00 ***12***

Cust Item ID:

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Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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120

QC2- Inspect parts off machine FAI/FAIB

0.00

120

QC

Memo

0.12

Quality Control

130

QC8- Inspect parts - second check

0.00

130

QC

Memo

0.24

Quality Control

DAS

14

9-89

16/05/16

140

Chemical Conversion Coat per QSI005 4.1

0.00

140

HandFinish

Memo

1.08

Hand Finishing

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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Page 3

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Item Name: Maintenance Step
Start Date: 5/2/2016 Start Qty: 12.00 ***12*** Cust Item ID:
Required Date: 5/13/2016 Req'd Qty: 12.00 ***12*** Customer:
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
155 *155* HandFinish Hand Finishing	Wing Walk as per dwg QSI005 4.4 Batch <u>M1344900</u> Memo	1.56				x20	7	16/05/24	
160 *160* QC Quality Control	QC3- Inspect Part Finish Memo	0.00 0.12				(20)			DAS 38 9-89 MAY 25 2016
170 *170* Packaging Packaging	Identify as per dwg & Stock Location <u>S743</u> Memo	0.00 0.12				20	DAS 6 9-89		MAY 25 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
							Completed By		
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Root Cause				FAULT CATEGORY			
Environment ☐	☐	No Re-verification ☐		Pressure/Forced ☐	☐	Temperature/Cure ☐	
Design ☐		Operator ☐		Bending ☐		Set-up ☐	
Doc/Data ☐		Offset/Setup ☐		Centre Not Concentric ☐		BOM/Route ☐	
Equip/Tooling ☐		Supplier ☐		Cracks ☐		Broken/Damage/Defect ☐	
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Misidentified ☐		Past Due ☐					

Work Order ID 144611

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144611

Page 4

Item ID: D4092-1

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Maintenance Step

Start Date: 5/2/2016 Start Qty: 12.00

12

Cust Item ID:

Required Date: 5/13/2016 Req'd Qty: 12.00

12

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

QC21- Final Inspection - Work Order Release

0.00

180

QC

Memo

1.20

Quality Control

16/5/26/2016

ML5 MAY 26 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

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Date : _____		Step #: _____		QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation				Disposition			
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				Lead hand / Supervisor Approval Verification			
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Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐					
OTHER : ☐							

Picklist Print

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Page 1

Work Order ID: 144611

144611

Parent Item: D4092-1

D4092-1

Parent Item Name: Maintenance Step

Start Date: 5/2/2016

Required Date: 5/13/2016

Start Qty: 12.00

Required Qty: 12.00

Comments: Ipp Rev:A New Issue 10-05-31 JLM Verified By:DD
REV:B AS PER ECN 11-639 JLM VERIFIED BY:DD

IPP

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2761-108		Manufactured	No			100	f	0.0000	2.5	31.57895			
D2761-108									**				
Extrusion (HPK)													

DAS
44
9-89

16-05-09

140840 → 59'

DQA: _____ Date: _____

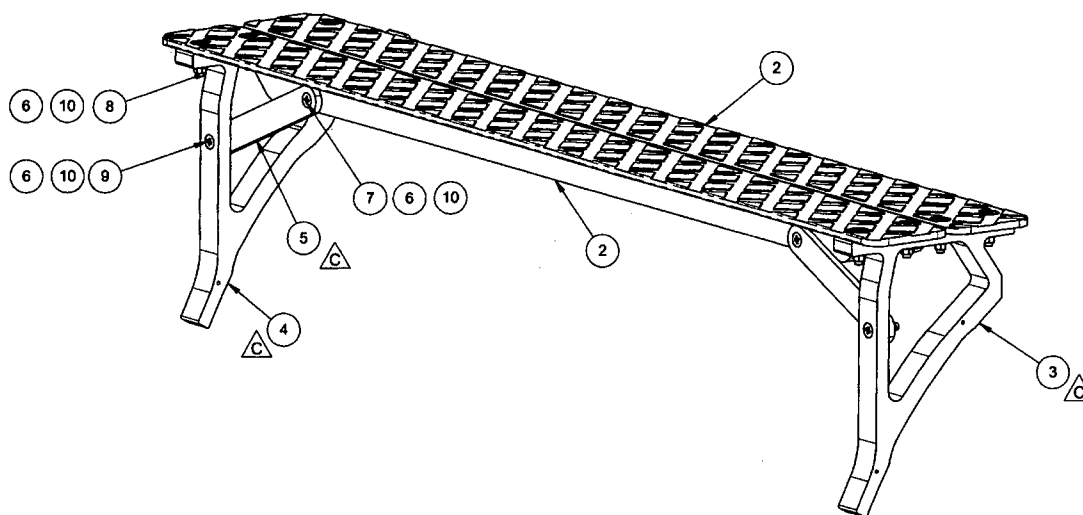


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Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐																																																																	
Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐																																																																	
Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐																																																																	
Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐																																																																	
		OTHER : ☐																																																																		



D4092-041 MAINTENANCE STEP ASSEMBLY

ITEM	QTY	P/N	DESCRIPTION
1	X	D4092-041	MAINTENANCE STEP ASSEMBLY
2	2	D4092-1	MAINTENANCE STEP
3	1	D4093-1	BRACKET
4	1	D4093-3	BRACKET
5	2	D4093-5	BRACE
6	12	MS21042L3	NUT, SELF-LOCKING
7	2	MS24694-S54	SCREW, CSK 100°
8	8	MS24694-S55	SCREW, CSK 100°
9	2	MS24694-S56	SCREW, CSK 100°
10	12	NAS1149D0332J	WASHER

TOP COPY
RETURN TO
ENGINEERING
CONTROLLED COPY
NOT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

144611 MJS
16-04-22

RELEASED
2015-09-21
ECN 15-556

C	REVISE DIMENSION; ZN D5-5, D8-5, B3-6, ADD BALLOONS; ZN B3-1, C6-1, B7-1, C8-2, B6-2, B4-2	VS	15.03.09
B	REDRAWN; LOWERED FOR AESTHETICS	RF	11.07.27
A	NEW ISSUE	RF	10.09.16
REV.	DESCRIPTION	BY	DATE
DESIGN	VS		
DRAWN	VS		
CHECKED	RF		
MFG. APPR.	JLM		
APPROVED	HS		
DE APPR.	DS		
DATE	15.03.09		

DART AEROSPACE USA, INC.

KENT, WA

DRAWING NO.
D4092

REV. C

SHEET 1 OF 6

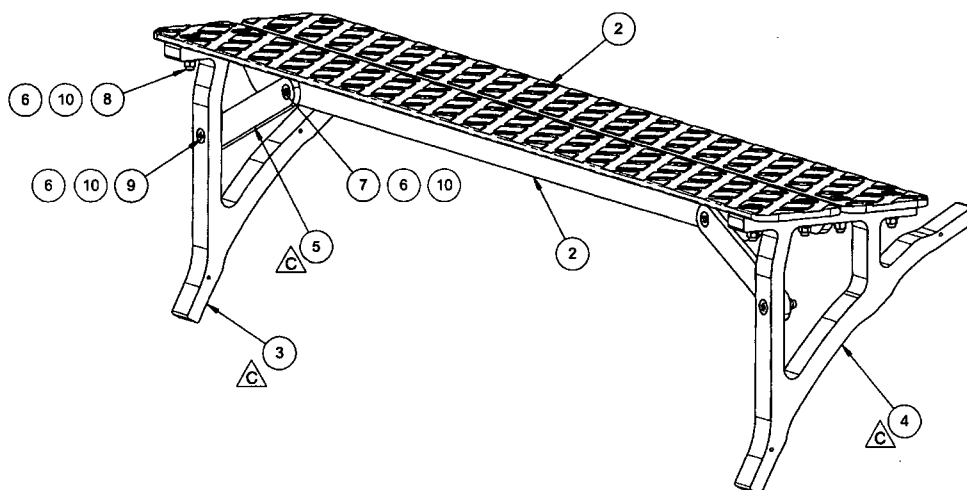
TITLE
MAINTENANCE STEP ASSY

SCALE
NTS

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APPROVED

ITEM	QTY -042	P/N	DESCRIPTION
1	X	D4092-042	MAINTENANCE STEP ASSEMBLY
2	2	D4092-1	MAINTENANCE STEP
3	1	D4093-1	BRACKET
4	1	D4093-3	BRACKET
5	2	D4093-5	BRACKET
6	12	MS21042L3	NUT, SELF-LOCKING
7	2	MS24694-S54	SCREW, CSK 100*
8	8	MS24694-S55	SCREW, CSK 100*
9	2	MS24694-S56	SCREW, CSK 100*
10	12	NAS1149D0332J	WASHER

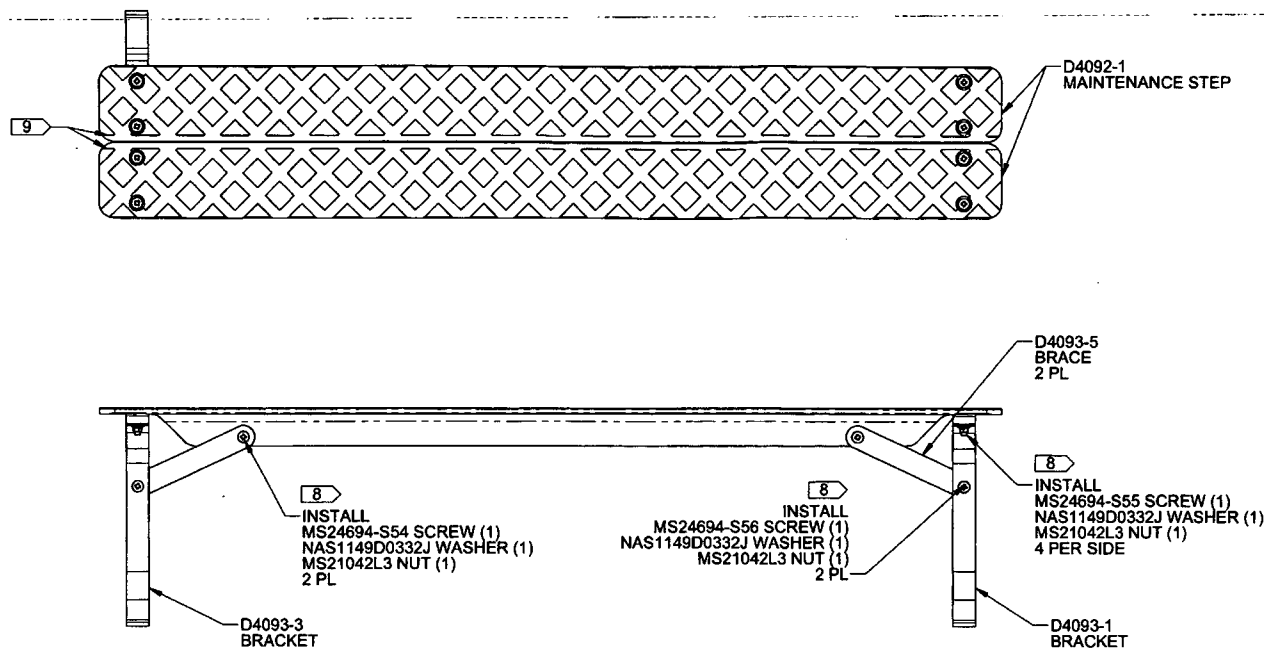


D4092-042 MAINTENANCE STEP ASSEMBLY

RELEASED
2015-09-21

APPROVED

DESIGN	VS	DART AEROSPACE USA, INC.	
DRAWN	VS	KENT, WA	
CHECKED	RF	DRAWING NO.	REV. C
MFG. APPR.	JLM	D4092	SHEET 2 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	MAINTENANCE STEP ASSY	NTS
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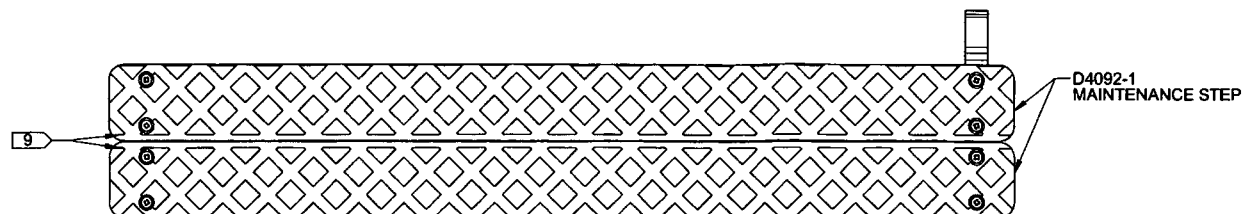
D4092-041 MAINTENANCE STEP ASSEMBLY

NOTES:

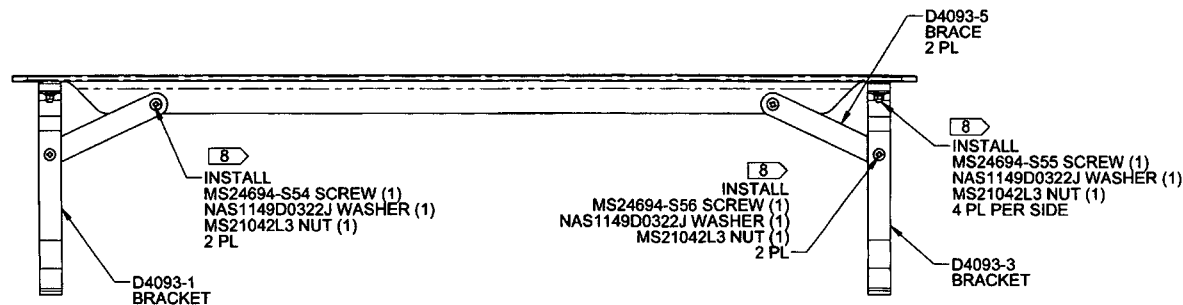
- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER QSI 044 6.1
- 7) WEIGHT: 5.28 lbs
- 8) TORQUE SCREWS UP TO 15-25 in-lb (1.7-2.8 N-m)
- 9) GRIP CUTOUT TOWARD CENTER

RELEASED
2015-09-21

APPROVED	DESIGN	VS	DART AEROSPACE USA, INC. KENT, WA	
	DRAWN	VS		
	CHECKED	RF	DRAWING NO.	REV. C
	MFG. APPR.	JLM	D4092	SHEET 3 OF 6
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	MAINTENANCE STEP ASSY	NTS
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D4092-1
MAINTENANCE STEP



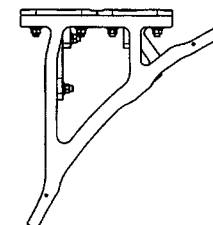
INSTALL
MS24694-S54 SCREW (1)
NAS1149D0322J WASHER (1)
MS21042L3 NUT (1)
2 PL

INSTALL
MS24694-S56 SCREW (1)
NAS1149D0322J WASHER (1)
MS21042L3 NUT (1)
2 PL

D4093-5
BRACE
2 PL

INSTALL
MS24694-S55 SCREW (1)
NAS1149D0322J WASHER (1)
MS21042L3 NUT (1)
4 PL PER SIDE

D4093-3
BRACKET



D4092-042 MAINTENANCE STEP ASSEMBLY

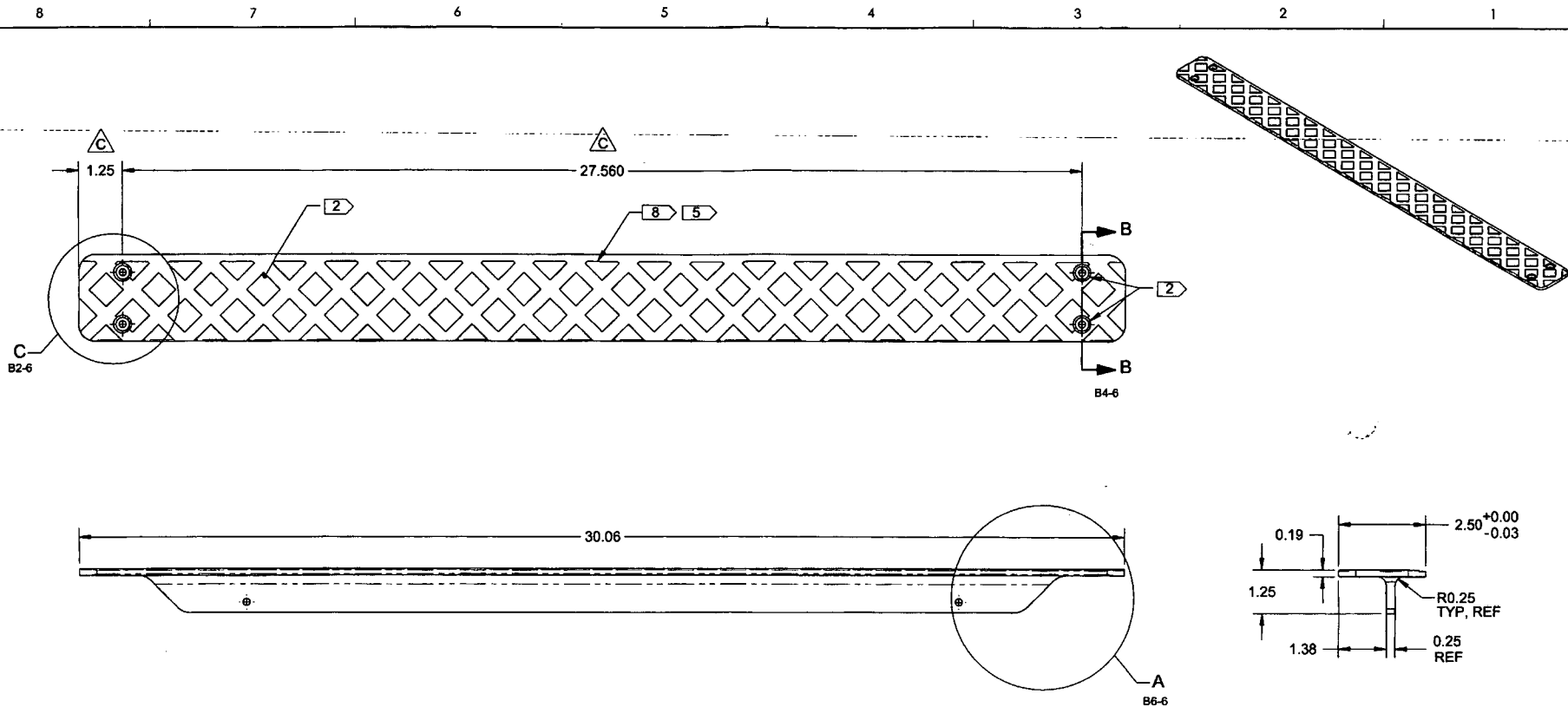
RELEASED
2015-09-21

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER QSI 044 6.1
- 7) WEIGHT: 5.28 lbs
- 8) TORQUE SCREWS UP TO 15-25 in-lb (1.7-2.8 N-m)
- 9) GRIP CUTOUT TOWARD CENTER

APPROVED

DESIGN	VS	DART AEROSPACE USA, INC.	
DRAWN	VS	KENT, WA	
CHECKED	RF	DRAWING NO.	REV. C
MFG. APPR.	JLM	D4092	SHEET 4 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	MAINTENANCE STEP ASSY	NTS
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D4092-1 MAINTENANCE STEP
(MAKE FROM D2761 EXTRUSION)

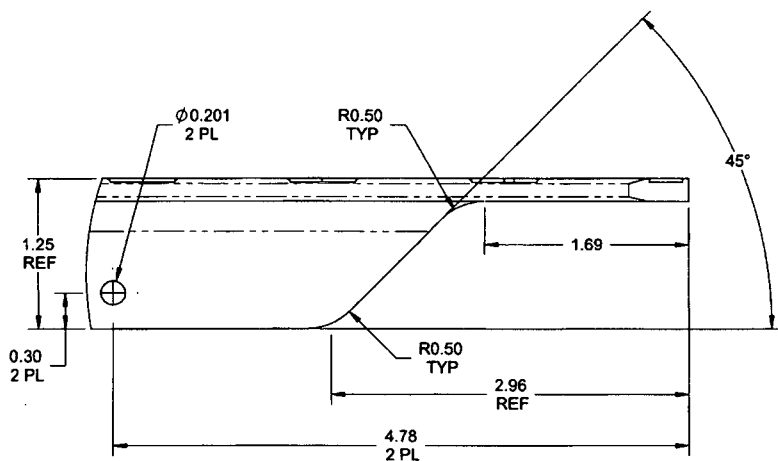
NOTES:

- 1) MATERIAL: MAKE FROM D2761 EXTRUSION
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
BLACK ANTI-SKID PAINT GRIP AREA AS INDICATED PER DART QSI 005 4.4
MASK RECTANGULAR CUTOUT PRIOR TO APPLICATION OF ANTI-SKID
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX, NOT REQUIRED TO DEBURR GRIP AREA
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 1.97 lbs
- 8) MACHINE 0.69 x 0.69 GRIP 0.030 DEEP AT 45° PATTERN 0.38 APART

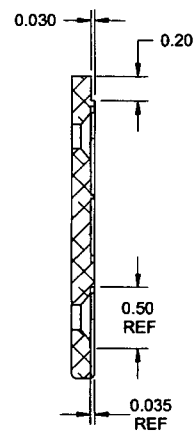
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2015-09-21

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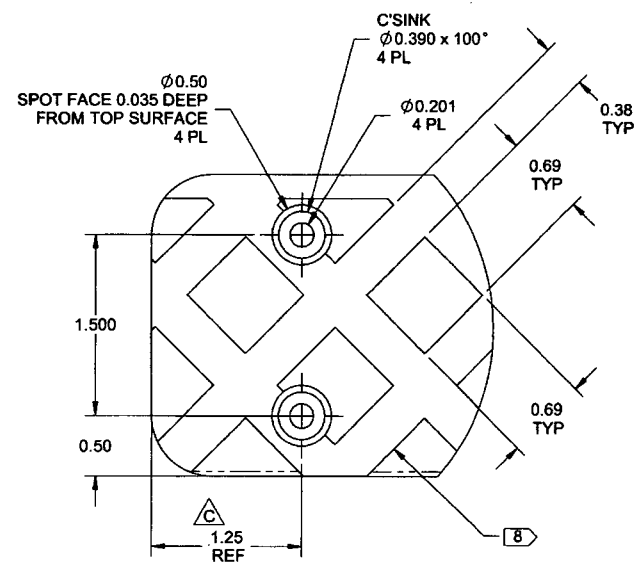
DESIGN	VS	DART AEROSPACE USA, INC.	
DRAWN	VS	KENT, WA	
CHECKED	RF	DRAWING NO.	REV. C
MFG. APPR.	JLM	D4092	SHEET 5 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	D9	MAINTENANCE STEP ASS'Y	NTS
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DETAIL A B3-5
SCALE 3X, TYP



SECTION B-B C3-5
SCALE 3X, TYP



DETAIL C C8-5
SCALE 3X, TYP

RELEASED
2015-09-21

APPROVED	DESIGN	VS	DART AEROSPACE USA, INC. KENT, WA	
	DRAWN	VS		
	CHECKED	RF	DRAWING NO.	REV. C
	MFG. APPR.	JLM	D4092	SHEET 6 OF 6
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	MAINTENANCE STEP ASS'Y	NTS
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